1/33

FIG. 1

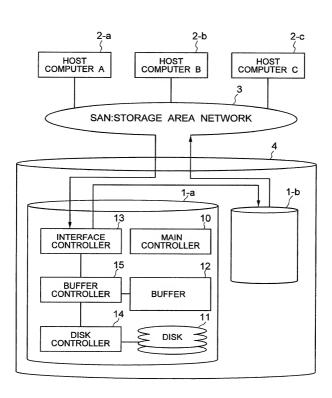


FIG. 2

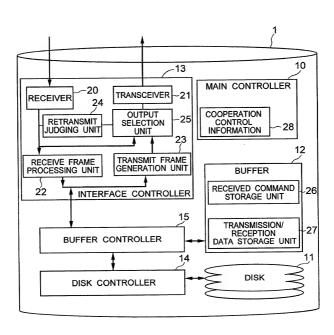


FIG. 3

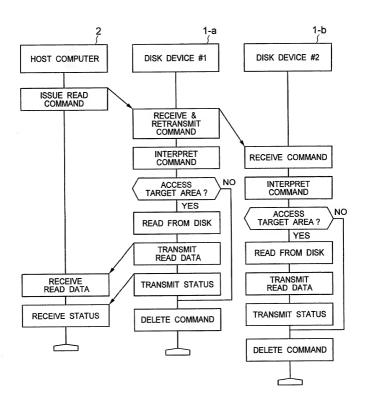
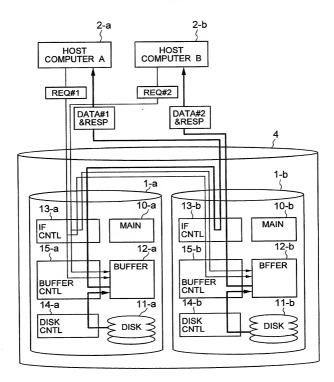


FIG. 4



5/33 FIG. 5

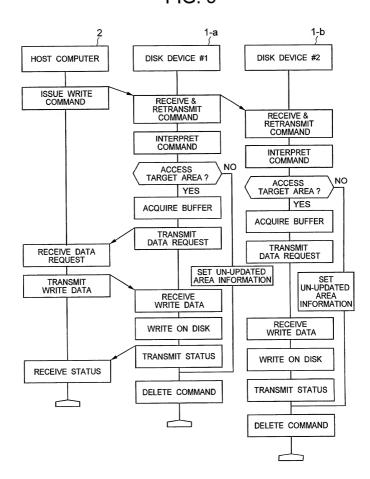
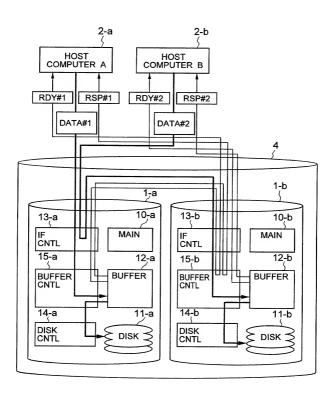


FIG. 6



**3**0

| # | UN-UPDATED AREA<br>START ADDRESS | UN-UPDATED<br>AREA SIZE | UPDATE INFORMATION |
|---|----------------------------------|-------------------------|--------------------|
| 0 |                                  |                         |                    |
| 1 |                                  |                         |                    |
| 2 |                                  |                         |                    |
| • |                                  |                         |                    |
| N |                                  |                         |                    |

FIG. 8

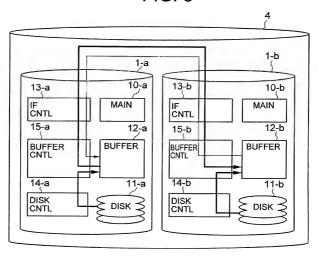


FIG. 9

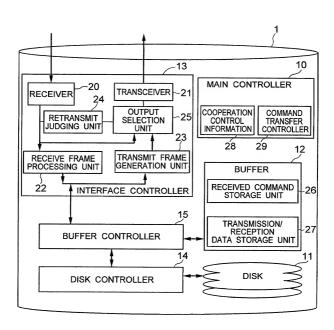


FIG. 10

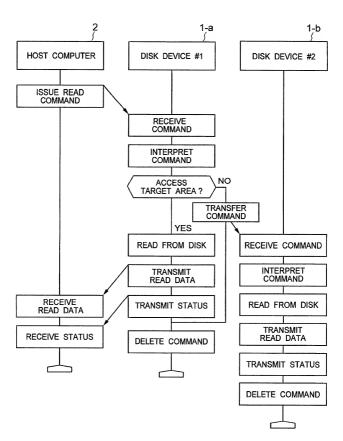
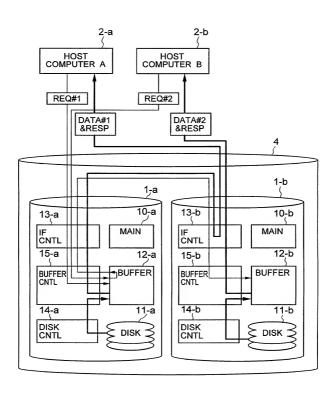


FIG. 11



11/33 FIG. 12

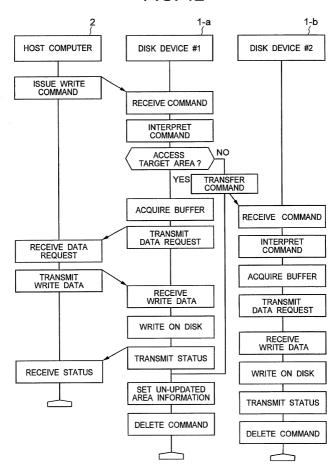
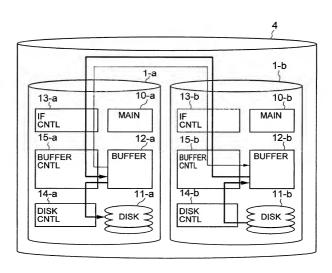


FIG. 13



13/33 FIG. 14

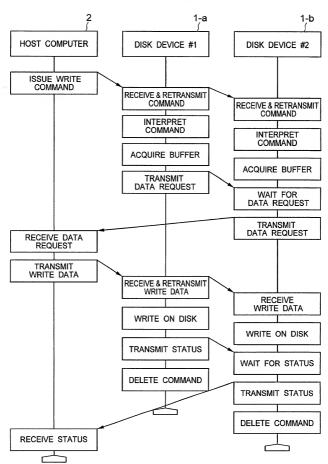
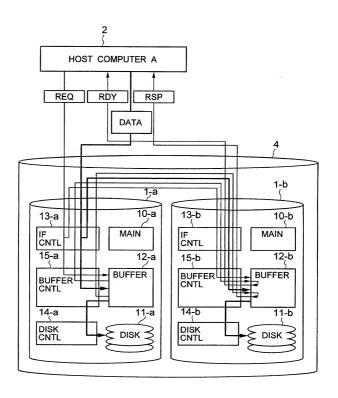


FIG. 15



15/33

| COOPERATIO<br>INFORMATIO          | ON CONTROL<br>N ITEM                      | EXAMPLE OF SETTING<br>FOR STORAGE DEVICE #1 | EXAMPLE OF SETTING<br>FOR STORAGE DEVICE #2 |
|-----------------------------------|---|---|---|
| STORAGE S'<br>ID (SHARE           |   | ID_0  | ID_0  |
| STORAGE DI                        |   | ID_1  | ID_2  |
|                                   | STORAGE DEVICE ID<br>COOPERATION<br>VICE) | ID_2  | ID_1  |
|                                   | ON PROCESSING<br>FRANSFER) MODE           | COMMAND<br>RETRANSMISSION                   | COMMAND<br>RECEPTION                        |
| ADEA                              | COOPERATION<br>PROCESSING AREA            | 0- (N-1)                                    | 0- (N-1)                                    |
| AREA<br>MANAGEMENT<br>INFORMATION | ACTIVE AREA START<br>ADDRESS              | 0   | N/2   |
| III CIWATION                      | ACTIVE AREA SIZE                          | N / 2                                       | N/2   |

| BYTE  | 7        | 6               | 5      | 4        | 3     | 2     | 1    |      | 0    |
|-------|----------|-----------------|--------|----------|-------|-------|------|------|------|
| 0-7   |          |                 |        | FCP_     | _LUN  |       |      |      |      |
| 8     |          | CO              | MMAN   | REFE     | RENCE | NUMB  | ER   |      |      |
| 9     |          | F               | RESER\ | /ED      |       | TASK  | ( AT | TRIE | BUTE |
| 10    |          |                 | TASK I | MANAGI   | EMENT | FLAGS | 3    |      |      |
| 11    |          |                 | RESE   | RVED     |       | RD D  | АТА  | WR   | DATA |
| 12    |          |                 | OI     | PERATION | ои со | DE    |      |      |      |
| 13    | LOGIC    | AL UNI          | T NUM  | BER      |       | FLAC  | 3    |      |      |
| 14-17 |          |                 | LOGIC  | AL BLC   | CK AD | DRESS |      |      |      |
| 18    |          |                 |        | RESE     | RVED  |       |      |      |      |
| 19-20 |          | TRANSFER LENGTH |        |          |       |       |      |      |      |
| 21    | CONTROL  |                 |        |          |       |       |      |      |      |
| 22-27 | RESERVED |                 |        |          |       |       |      |      |      |
| 28-31 |          |                 |        | FCP      | DL    |       |      |      |      |

FIG. 18

| WORD BYTE | 3         | 2 1 0          |       |  |  |  |
|-----------|-----------|----------------|-------|--|--|--|
| 0         | R_CTL     |                | D_ID  |  |  |  |
| 1         | CS_CTL    | S_ID           |       |  |  |  |
| 2         | TYPE      |                | F_CTL |  |  |  |
| 3         | SEQ_ID    | SEQ_ID SEQ_CNT |       |  |  |  |
| 4         | ох        | _ID            | RX_ID |  |  |  |
| 5         | PARAMETER |                |       |  |  |  |

FIG. 19

| # | HOST ID (S_ID) | OX_ID | RX_ID |
|---|----------------|-------|-------|
| 0 | ID_3           | OX_00 | RX_00 |
| 1 | ID_3           | OX_01 | RX_02 |
| 2 | ID_4           | OX_01 | RX_04 |
|   | _              | _     | _     |
| N | _              | _     | _     |

FIG. 20

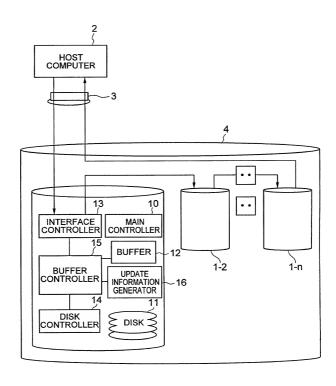
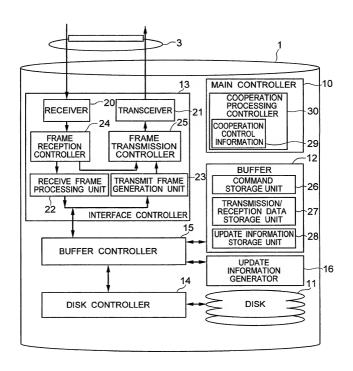


FIG. 21



| COOPERATION INFORMATION     |                                   | STORAGE<br>DEVICE #1 | STORAGE<br>DEVICE #2       | STORAGE<br>DEVICE #N |
|-----------------------------|-----------------------------------|----------------------|----------------------------|----------------------|
| STORAGE SYST<br>(SHARED ID) | TEM ID                            | ID_0                 | <b>←</b>                   | <b>←</b>             |
| STORAGE DEVI<br>(UNIQUE ID) | CE ID                             | ID_1                 | ID_2                       | ID_N                 |
| POSITION MAP                |                                   | 1                    | 2                          | N                    |
| COMMAND TRA                 | NSFER MODE                        |                      | RECEPTION & RETRANSMISSION | RECEPTION ONLY       |
|                             | RAID LEVEL                        | 5                    | <b>←</b>                   | <b>←</b>             |
| REDUNDANT<br>CONFIGURATION  | NO. OF DATA DISKS                 | N-1                  | <b>←</b>                   | ←                    |
| MANAGEMENT<br>INFORMATION   | NAGEMENT NO. OF REDUNDANT         |                      | <b>←</b>                   | <b>←</b>             |
|                             | REDUNDANT DATA<br>MANAGEMENT SIZE | 64 (kB)              | <b>←</b>                   | <b>←</b>             |

| SOF | HEADER | PAYLOAD | CRC | EOF |
|-----|--------|---------|-----|-----|
|-----|--------|---------|-----|-----|

FIG. 24

| WORD BYTE | 3         | 2 1 0          |       |  |  |  |
|-----------|-----------|----------------|-------|--|--|--|
| 0         | R_CTL     |                | D_ID  |  |  |  |
| 1         | CS_CTL    | S_ID           |       |  |  |  |
| 2         | TYPE      | F_CTL          |       |  |  |  |
| 3         | SEQ_ID    | SEQ_ID SEQ_CNT |       |  |  |  |
| 4         | OX        | _ID            | RX_ID |  |  |  |
| 5         | PARAMETER |                |       |  |  |  |

FIG. 25

| BYTE  | 7       | 6               | 5      | 4      | 3     | 2     | 1    |      | 0    |
|-------|---------|-----------------|--------|--------|-------|-------|------|------|------|
| 0-7   |         |                 |        | FCP_   | _LUN  |       |      |      |      |
| 8     |         | CC              | MMANI  | ) REFE | RENCE | NUMB  | ER   |      |      |
| 9     |         | F               | RESER\ | /ED    |       | TAS   | C AT | TRII | BUTE |
| 10    |         |                 | TASK I | MANAGI | EMENT | FLAGS | ;    |      |      |
| 11    |         |                 | RESE   | RVED   |       | RD D  | ATA  | WR   | DATA |
| 12    |         | OPERATION CODE  |        |        |       |       |      |      |      |
| 13    | LOGIC   | AL UNI          | T NUM  | BER    |       | FLAC  | }    |      |      |
| 14-17 |         |                 | LOGIC  | AL BLC | CK AD | DRESS |      |      |      |
| 18    |         |                 |        | RESE   | RVED  |       |      |      |      |
| 19-20 |         | TRANSFER LENGTH |        |        |       |       |      |      |      |
| 21    | CONTROL |                 |        |        |       |       |      |      |      |
| 22-27 |         | RESERVED        |        |        |       |       |      |      |      |
| 28-31 |         |                 |        | FCP    | DL    |       |      |      |      |

FIG. 26

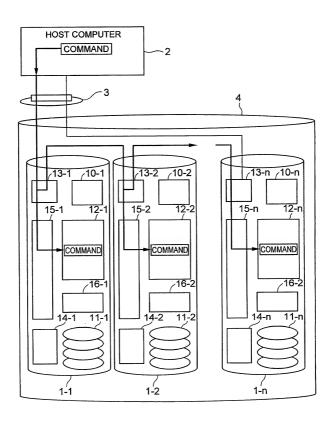


FIG. 27

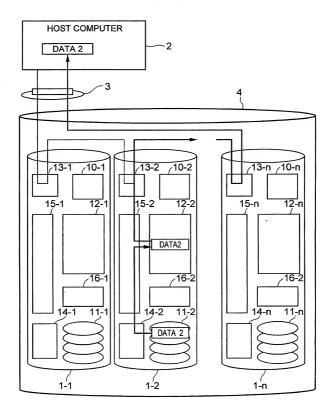
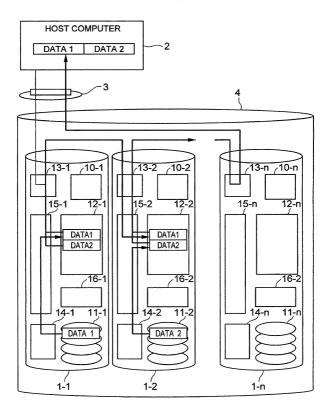


FIG. 28



| BYTE | 7 | 6                                | 5     | 4     | 3      | 2    | 1      | 0 |
|------|---|----------------------------------|-------|-------|--------|------|--------|---|
| 0-X  |   | DATA_VALID BIT                   |       |       |        |      |        |   |
| _    |   | USER (READ/WRITE) DATA SEGMENT 0 |       |       |        |      |        |   |
| -    |   | · ·                              |       |       |        |      |        |   |
| -    |   | USER                             | (READ | WRITE | ) DATA | SEGM | IENT n |   |

FIG. 30

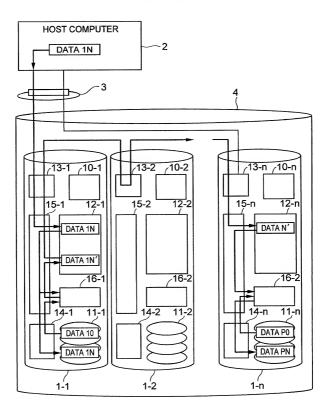
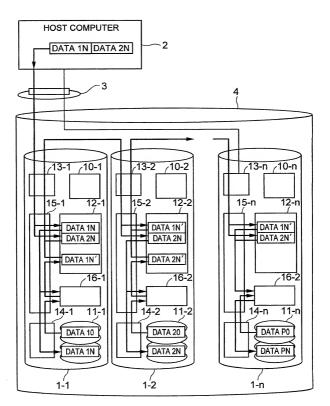
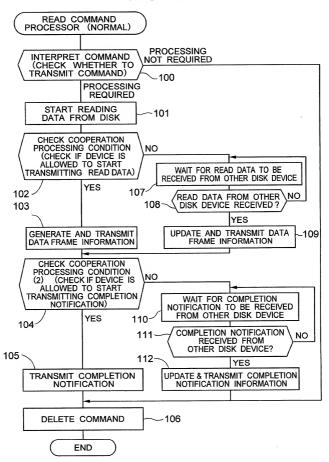
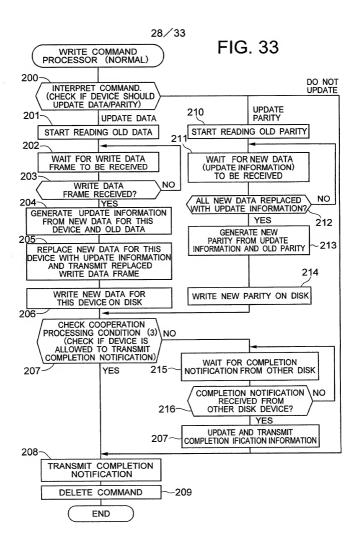


FIG. 31







| COOPERATION INFORMATION     |                                   | STORAGE<br>DEVICE #1 | STORAGE<br>DEVICE #2          | STORAGE<br>DEVICE #N |
|-----------------------------|-----------------------------------|----------------------|-------------------------------|----------------------|
| STORAGE SYST<br>(SHARED ID) | EM ID                             | ID_0                 | <b>←</b>                      | <b>+</b>             |
| STORAGE DEVI<br>(UNIQUE ID) | CE ID                             | ID_1                 | ID_2                          | ID_N                 |
| POSITION MAP                |                                   | 1                    | 2                             | N                    |
| COMMAND TRA                 | NSFER MODE                        |                      | RECEPTION &<br>RETRANSMISSION | RECEPTION ONLY       |
|                             | RAID LEVEL                        | 5                    | <b>+</b>                      | 4                    |
|                             | NO. OF DATA DISKS                 | 3                    | <b>+</b>                      | <b>←</b>             |
| REDUNDANT<br>CONFIGURATION  | NO. OF REDUNDANT<br>DATA DISKS    | 1                    | <b>←</b>                      | <b>+</b>             |
| MANAGEMENT<br>INFORMATION   | REDUNDANT DATA<br>MANAGEMENT SIZE | 64 (kB)              | +                             | ļ                    |
|                             | OPERATION MODE (NORMAL/FALLBACK)  | FALLBACK             | <b></b>                       | <del>-</del>         |
|                             | FAILING STORAGE<br>DEVICE ID      | ID_2                 | <b>←</b>                      | 1                    |

FIG. 35

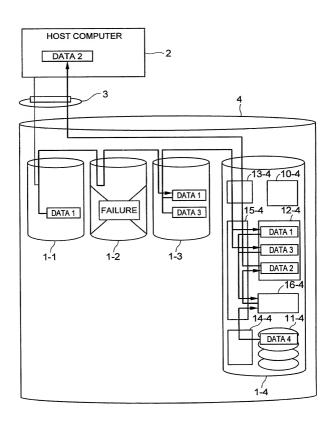


FIG. 36

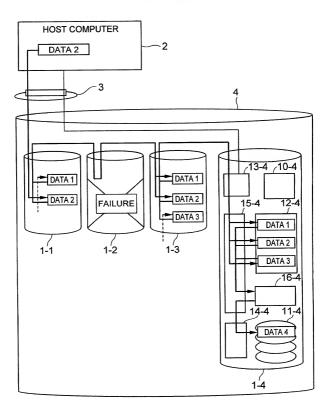


FIG. 37

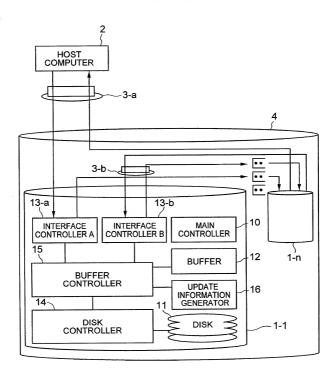


FIG. 38

